

Notice of Allowability

Application No.

10/718,823

Examiner

Srirama Channavajjala

Applicant(s)

JAIN ET AL.

Art Unit

2166

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 11/22/06.
2. ☒ The allowed claim(s) is/are 1 and 3-25[re-numbered as: 1-24].
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date <u>1/30/07</u> . |
| 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date <u>11/22/06</u> | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

Srirama Channavajjala
Primary Examiner
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DETAILED ACTION

1. Claims 1,3-25 are allowed.
2. Examiner acknowledges applicant's amendment filed on 11/22/2006
3. Claims 1,3,24-25 have been amended [11/22/2006].
4. Claim 2 has been cancelled [11/22/2006].

Drawings

5. The Drawings filed on **11/21/2003** are acceptable for examination purpose

Priority

6. This application is a CIP of **10/648,577** filed on 8/25/2003 and is a CIP of **10/648,600** filed on 8/25/2003.

Information Disclosure Statement

7. The information disclosure statement filed on 11/22/2006 is in compliance with the provisions of 37 CFR 1.97, and has been considered and a copy is enclosed with this Office Action.

Double Patenting

8. In view of applicant filed "Terminal disclaimer" on 1/23/2007, the double patenting rejection as set forth in the previous office action is hereby withdrawn.

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Interview:

9. Applicant's Attorney Jasper Kwoh, Regd. No. 54,921 is thanked for the telephone interview on 30 Jan 2007. During that telephone interview Jasper Kwoh, Regd.No. 54,921 granted authorization to ***amend claims*** 1,4-8,11-12,14-25, amend to the specification at page 42, Paragraph [00149] starting line 15.

EXAMINER'S AMENDMENT

10. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Applicant's Attorney Jasper Kwoh, Regd.No. 54,921 on 30 January 2007.

The application has been amended as follows:

IN THE SPECIFICATION:

11. Please amend to the specification at **page 42, Paragraph [00149] starting line 15** as follows:

The term "computer-usable medium" or "computer-readable medium" as used herein, refers to any medium that provides information or is usable by the processor(s) 1407. Such a medium may take many forms, including, but not limited to, non-volatile media and ~~[[,]]~~ volatile media ~~and transmission media~~. Non-volatile media, i.e., media that can retain information in the absence of power, includes the ROM 1409, CD ROM, magnetic tape, and magnetic discs. Volatile media, i.e., media that can not retain information in the absence of power, includes the main memory 1408. ~~Transmission media includes coaxial cables, copper wire and fiber optics, including the wires that comprise the bus 1406. Transmission media can also take the form of carrier waves; i.e., electromagnetic waves that can be modulated, as in frequency, amplitude or phase, to transmit information signals. Additionally, transmission media can take the form of acoustic or light waves, such as those generated during radio wave and infrared data communications.~~

IN THE CLAIMS:

A complete listing of the claims is set forth below. Please amend the claims as follows:

1. **(Currently Amended)** A method of storing data into a database, comprising:

identifying the data to load store into the a database, wherein the data is associated with a schema information;

identifying the schema information for the data;

determining if whether the schema information and a schema-specific load structure metadata that are is used to load the data into the database already exists;

acquiring the schema information from the data based on a first criteria, wherein the first criteria is associated with determining whether the schema information already exists;

~~using the existing schema metadata to load the data into the database if the schema metadata already exists;~~

generating an in memory representation of the schema information ~~metadata~~ to load the data into the database based on the first criteria ~~if the schema metadata does not already exist;~~

~~determining if schema-specific load structures that is used to load the data into the database already exists;~~

~~using the existing schema-specific load structures to load the data into the database if the schema-specific load structures already exists; and~~

generating the schema-specific load structures to load the data into the database based on a second criteria, wherein the second criteria is associated with determining whether the schema-specific load structure already exists; and if the schema-specific load structures do not exist

storing the generated schema information and schema-specific load structures for subsequent loads of the data.

2. **(Canceled)**

3. **(Previously Presented)** The method of claim 1 in which the schema-specific load structures comprise at least one of array column, data stream, dispatch table entry or allocated address space in memory.

4. **(Currently Amended)** The method of claim 1 in which the schema information ~~metadata~~ comprises at least one of column type, column number or column identifier.

5. **(Currently Amended)** The method of claim 1 in which the schema information ~~metadata~~ is protocol neutral.

6. **(Currently Amended)** The method of claim 1 in which the schema information metadata can be used by multiple different protocol-based load procedures.
7. **(Currently Amended)** The method of claim 6 in which the multiple different protocol-based load procedures load data having different protocols, wherein the protocols comprise the File Transfer Protocol or and the Hypertext Transfer Protocol.
8. **(Currently Amended)** The method of claim 1 in which the schema information metadata is cached in memory.
9. (Original) The method of claim 1 in which the data is loaded using multiple streams of load operations.
10. (Original) The method of claim 9 in which the multiple streams are loaded in parallel.
11. **(Currently Amended)** The method of claim 1 further comprising:
 - ~~a client application receiving the data at a client application; and~~
 - storing the data according to a direct path approach
 - ~~determining one or more routines that are associated with a type of said data,~~
 - ~~wherein said one or more routines are implemented by a program that is~~
 - ~~external to both said client application and a database server that~~
 - ~~manages said database;~~
 - ~~in response to said one or more routines being invoked, said program performing~~
 - ~~steps comprising:~~

~~determining one or more first values that are specified in said data,~~
~~wherein said one or more first values correspond to one or more~~
~~attributes of said type; and~~
~~determining one or more second values that correspond to one or more~~
~~hidden columns of one or more tables in said database;~~
~~generating, based on said one or more first values and said one or more second~~
~~values, a data stream that conforms to a format of data blocks of said~~
~~database; and~~
~~writing said data into one or more data blocks in said database.~~

12. **(Currently Amended)** The method of Claim 11, the direct path approach further comprising:

~~in response to said one or more routines being invoked, said program performing~~
~~steps comprising:~~
~~creating a data structure that comprises:~~
~~one or more first elements that correspond to said one or more attributes; and~~
~~one or more second elements that correspond to said one or more hidden~~
~~columns;~~
~~populating said one or more first elements with said one or more first values; and~~
~~populating said one or more second elements with said one or more second~~
~~values;~~
~~wherein said generating a of said data stream is based on said data structure.~~

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13. (Original) The method of Claim 12, wherein said data structure is created in memory that is associated with said client application.

14. (Currently Amended) The method of Claim 12 44, wherein ~~at least one of said one or more second values is associated with said one or more first values and distinguishes said one or more first values from other values in said data~~ the data structure comprises a database table and an array.

15. (Currently Amended) The method of Claim 14 44, wherein ~~at least one of said one or more second values describes a position of said one or more first values relative to other values in said data~~ the array comprises user visible columns and hidden columns.

16. (Currently Amended) The method of Claim 11, wherein ~~a number of attributes of said type is not defined to said client application~~ the data comprises semistructured data.

17. (Currently Amended) The method of Claim 11, wherein ~~a type of an attribute of said type of said data is not defined to said client application~~ the client application specifies actions to be performed when an error occurs.

18. (Currently Amended) The method of Claim 11, wherein data are stored in the database ~~said generating and said writing are performed~~ without causing a Structured Query Language (SQL) engine to load the said data.

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19. **(Currently Amended)** The method of Claim 14, further comprising storing data into the database using conventional path loading. ~~wherein determining said one or more routines comprises locating addresses of one or more routines that are in a same entry as an identity of said type.~~

20. **(Currently Amended)** The method of Claim 19 44, further comprising:
adding, to a table, an entry that indicates an association between said type and
said one or more routines parsing data that comprises one or more
instances of a type.

21. **(Currently Amended)** The method of Claim 20 44, further comprising:
invoking one or more routines that are located at one or more addresses that are
associated with said type wherein the client application generates Structured
Query Language (SQL) commands.

22. **(Currently Amended)** The method of claim 1 further comprising:
a client application receiving the data that conforms to a first type definition that
indicates one or more first attributes, wherein at least one of said one or
more first attributes is of a type that is defined by a second type definition
that indicates one or more second attributes;
determining one or more first routines that are associated with said first type
definition, wherein said one or more first routines are external to both said
client application and a database server that manages said database;

~~in response to one or more calls to said one or more first routines:~~

~~creating a first data structure with one or more first elements that~~

~~correspond to said one or more first attributes; and~~

~~populating said one or more first elements with one or more first values~~

~~that are specified in said data, wherein said one or more first values~~

~~correspond to said one or more first attributes;~~

~~in response to one or more calls to one or more second routines that are~~

~~associated with said second type definition:~~

~~creating a second data structure with one or more second elements that~~

~~correspond to said one or more second attributes; and~~

~~populating said one or more second elements with one or more second~~

~~values that are specified in said data, wherein said one or more~~

~~second values correspond to said one or more second attributes;~~

~~generating, based on said first data structure and said second data structure, a~~

~~data stream that conforms to a format of data blocks of said database; and~~

~~writing said data into one or more data blocks in said database releasing~~

~~resources associated with the schema information or load structure based~~

~~on timed out information.~~

23. **(Currently Amended)** The method of Claim 22, further comprising:

~~generating a set identifier that is associated with one of said one or more first~~
~~elements; and~~
~~populating a plurality of elements in said second data structure with said set~~
~~identifier~~ releasing resources associated with the schema information or
load structure based upon a least recently used (LRU) approach.

24. **(Currently Amended)** A system for storing data into a database, comprising:

means for identifying the data to load store into the a database, wherein the data
is associated with a schema information;
means for identifying the schema information for the data;
means for determining whether the if schema information and a schema-specific
load structure metadata that are ~~is~~ used to load the data into the database
already exists;
means for acquiring the schema information from the data based on a first
criteria, wherein the first criteria is associated with the means for
determining whether the schema information using the existing schema
~~metadata to load the data into the database if the schema metadata~~
already exists; ~~and~~
means for generating an in memory representation of the schema information
~~metadata~~ to load the data into the database based on the first criteria if the
~~schema metadata does not already exist;~~

~~means for determining if schema-specific load structures that is used to load the data into the database already exists;~~

~~means for using the existing schema-specific load structures to load the data into the database if the schema-specific load structures already exists; and~~

means for generating the schema-specific load structures to load the data into the database based on a second criteria, wherein the second criteria is associated with the means for determining whether the schema-specific load structure already if the schema-specific load structures do not exists;
and

means for storing the generated schema information and schema-specific load structures for subsequent loads of the data.

25. **(Currently Amended)** A computer program product comprising a computer usable medium having executable code to execute a process for storing data into a database, the process comprising:

instructions for identifying the data to load store into the a database, wherein the data is associated with a schema information;

instructions for identifying the schema information for the data;

instructions for determining whether the if schema information and a schema-specific load structure metadata that are is used to load the data into the database already exists;

instructions for acquiring the schema information from the data based on a first criteria, wherein the first criteria is associated with determining whether

the schema information ~~using the existing schema metadata to load the~~
~~data into the database if the schema metadata already exists; and~~
instructions for generating an in memory representation of the schema
information metadata to load the data into the database based on the first
criteria ~~if the schema metadata does not already exist;~~
~~instructions for determining if schema-specific load structures that is used to load~~
~~the data into the database already exists;~~
~~instructions for using the existing schema-specific load structures to load the data~~
~~into the database if the schema-specific load structures already exists;~~
and
instructions for generating the schema-specific load structures to load the data
into the database based on a second criteria, wherein the second criteria
is associated with determining whether the schema-specific load structure
already ~~if the schema-specific load structures do not exists; and~~
instructions for storing the generated schema information and schema-specific
load structures for subsequent loads of the data.

In the Title:

Pursuant to MPEP 606.01 the Title is changed to read

**--GENERATING THE SCHEMA-SPECIFIC LOAD STRUCTURE TO LOAD THE
DAA INTO THE DATABASE BASED ON A FIRST,SECOND CRITERIA, WHEREIN
THE SECOND CRITERIA IS ASSOCIATED WITH DETERMINING WHETHER THE
SCHEMA-SPECIFIC LOAD STRUCTURE ALREADY EXISTS --**

Reasons for allowance

The following is an examiner's statement of reasons for indication of allowable subject matter:

The present invention is directed to method and system for storing data into a database, where a determination is made if schema metadata that is used to load the data into the database already exists, and where the existing schema metadata is used to load the data into the database if the schema metadata already exists. If an appropriate schema metadata does not exist, then it is generated and ached so that a later load operation for the same schema type will not need to re-generate this information.

The closest prior art Janssen,Ocke , EP 1367503 published on 12/3/2003 is directed to designing and navigating through the database structure , more specifically, providing user interface for database design structure which allows user to get structural information of the database objects, further user to easily link tables by relation . It is noted that the structural representation includes information about primary and or foreign keys and columns of the table. The structural view is then provided as a hierarchical tree view [page 3, col 3, 0016, col 4, 0018].

The closest prior art Dettinger et al. US Pub.No. 2004/0162832 filed on Feb 12, 2003 is directed to automatic data abstraction generation using database schema and related objects, more specifically, automatically generating a data repository abstraction component describing, and used to access, data in a data repository, particularly

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generating a list of logical fields that are mapped directly to a particular entity in the underlying physical representation, further field specification exemplifies a filtered field access method [page 2, col 1, 0013, page 4, col 2, 0045, fig 2A].


It is however, noted that the prior art of record either along or in combination fails to anticipate or render obvious, the recited feature “generating the schema-specific load structures to load the data into the database *based on a second criteria, wherein the second criteria is associated with determining whether the schema-specific load structure already exists*”, in claim 1,24-25.

These features, together with the other limitations of the independent claims are novel and non-obvious over the prior art of record. The dependent claims 3-25 being definite, enabled by the specification, and further limiting to the independent claims are also allowable

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Srirama Channavajjala whose telephone number is 571-272-4108. The examiner can normally be reached on Monday-Friday from 8:00 AM to 5:30 PM Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alam, Hosain, T, can be reached on (571) 272-3978. The fax phone numbers for the organization where the application or proceeding is assigned is 703/872-9306 Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free)

SC
Patent Examiner.
February 01, 2007.


SRIRAMA CHANNAVAJJALA
PRIMARY EXAMINER